## Cheadle Hulme School
## Juniors and Infants Calculation Policy

| INFANTS |
|---|
| Children in EYFS, Year 1 and Year 2 will be given a solid foundation in the basic building blocks of mental and written arithmetic. Through the teaching of place value, children will develop an understanding of how numbers work, so that they are confident with 2-digit numbers and beginning to read and say numbers above 100. |

**Addition and Subtraction:** A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts and ensures that all children leave Year 2 knowing the pairs of numbers which make all the numbers up to 10 at least. Children will also have experienced and been taught pairs to 20. Children's knowledge of number facts enables them to add several 1-digit numbers, and to add/subtract a 1-digit number to/from a 2-digit number.  Another important conceptual tool is the ability to add/subtract 1 or 10 and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of 10 to and from any 2-digit number. The most important application of this knowledge is the ability to add or subtract any pair of 2-digit numbers by counting on or back in 10s and 1s. Children may extend this to adding by partitioning numbers into 10s and 1s.

**Multiplication and Division:** Children will be taught to count in 2s, 3s, 5s and 10s, and will relate this skill to repeated addition. Children will meet and begin to learn the associated ×2, ×3, ×5 and ×10 tables. Engaging in a practical way with the concept of repeated addition and the use of visual representations enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total will introduce them to the idea of division. Children will also be taught to double and halve numbers and will thus experience scaling up or down as a further aspect of multiplication and division.
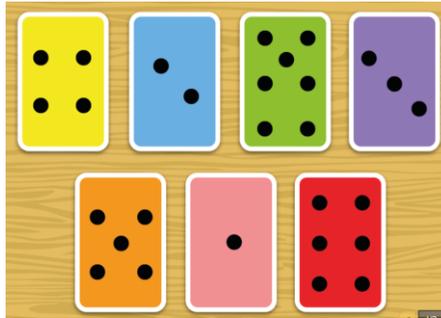
| EYFS | |
|---|---|
| **Learning Outcome** | **Methods and Strategies for Children** |
| <br>COUNTING<br><br>• Counting up to ten and beyond, using cardinal numbers<br>• Recognising the numbers 1 to 9<br>• Counting aloud in ones, twos, fives, tens<br>• Estimating a number of objects and checking by counting<br>• Matching and comparing the number of objects in two groups<br>• Counting out a number of objects from a larger group<br>• Positioning items according to their place in a group using ordinal numbers (first, second, third, etc.) | **Counting**<br>Counting dots on cards      Matching<br>  |

| | |
|---|---|
| **CALCULATING** | • Using a number line to count on and back<br>• Finding one more or one less than a number from 1 to ten<br>• Sharing objects into equal groups and counting how many are in each group<br>• Understanding that 'addition' means combining and 'subtraction' means taking away<br>• Finding the total number of items in two groups by counting them all<br>• Comparing numbers and recognising which is 'more' or 'less' |
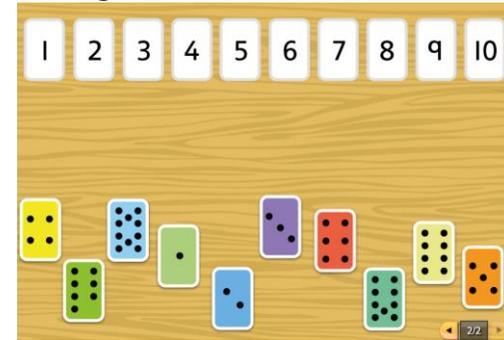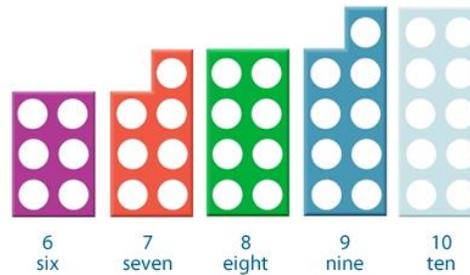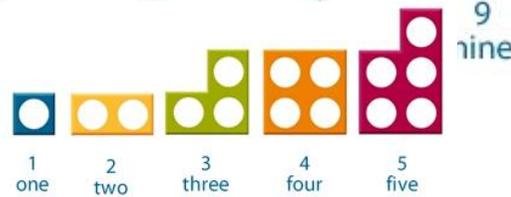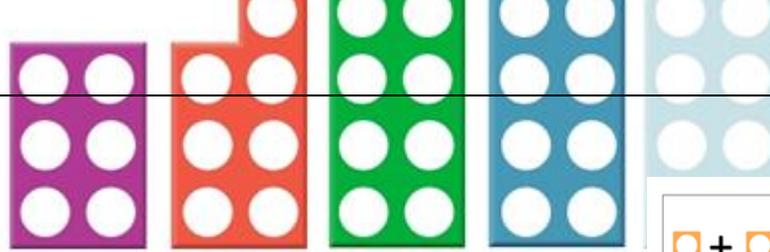
## Year 1

## ADDITION

| | **Learning Outcome** | **Methods and Strategies for Children** |
|---|---|---|
| **Y1<br>+** | • Number bonds ('story' of 5, 6, 7, 8, 9 and 10)<br>• Count on in 1s from a given 2-digit number<br>• Add two 1-digit numbers<br>• Add three 1-digit numbers, spotting doubles or pairs to 10 | **Using place value**<br>Count in 1s<br>e.g. *45 + 1*<br>Count in 10s<br>e.g. *45 + 10 without counting on in 1s* <table><tr><td>34</td><td>35</td><td>36</td></tr><tr><td>44</td><td></td><td>46</td></tr><tr><td>54</td><td>55</td><td>56</td></tr></table> |

- Count on in 10s from any given 2-digit number
- Add 10 to any given 2-digit number
- Use number facts to add 1-digit numbers to 2-digit numbers
- e.g. *Use 4 + 3 to work out 24 + 3, 34 + 3*
- Add by putting the larger number first

Add 10 to any given 2-digit number

**Counting on**
Count on in 1s
e.g. *8 + 3 as 8, 9, 10, 11*



Add, putting the larger number first
Count on in 10s
e.g. *45 + 20 as 45, 55, 65*

**Using number facts**
'Story' of 4, 5, 6, 7, 8 and 9
e.g. *7 = 7 + 0, 6 + 1, 5 + 2, 4 + 3*
Number bonds to 10
e.g. *5 + 5, 6 + 2, 7 + 3, 8 + 2, 9 + 1, 10 + 0*

$4 + 6 = 10$

Use patterns based on known facts when adding
e.g. *4 + 3 = 7 so we know 24 + 3, 44 + 3, 74 + 3*

## SUBTRACTION

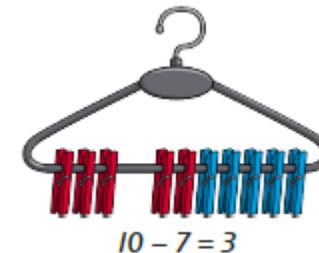| | Learning Outcome | Methods and Strategies for Children |
|---|---|---|
| **Y1**<br>**–** | <ul><li>Number bonds ('story' of 5, 6, 7, 8, 9 and 10)</li><li>Count back in 1s from a given 2-digit number</li><li>Subtract one 1-digit number from another</li><li>Count back in 10s from any given 2-digit number</li><li>Subtract 10 from any given 2-digit number</li><li>Use number facts to subtract 1-digit numbers from 2-digit numbers e.g. *Use 7 – 2 to work out 27 – 2, 37 – 2*</li></ul> | **Using place value**<br>Count back in 1s<br>e.g. *Know 53 – 1*<br>Count back in 10s<br>e.g. *Know 53 – 10 without counting back in 1s*<br><br>**Taking away**<br>Count back in 1s<br>e.g. *11 – 3 as 11, 10, 9, 8*<br>e.g. *14 – 3 as 14, 13, 12, 11*<br><br>Count back in 10s<br>e.g. *53 – 20 as 53, 43, 33*<br><br>**Using number facts**<br>'Story' of 4, 5, 6, 7, 8 and 9<br>e.g. 'Story' of 7 is *7 – 1 = 6, 7 – 2 = 5, 7 – 3*<br>Number bonds to 10<br>e.g. *10 – 1 = 9, 10 – 2 = 8, 10 – 3 = 7*<br><br>Subtract using patterns of known facts<br>e.g. *7 – 3 = 4 so we know 27 – 3 = 24, 47 – 3 = 44, 77 – 3 = 74* |

# MULTIPLICATION

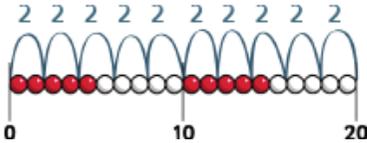| | Learning Outcome | Methods and Strategies for Children |
|---|---|---|
| **Y1** **×** | • Begin to count in 2s, 5s and 10s<br>• Begin to say what three 5s are by counting in 5s, or what four 2s are by counting in 2s, etc.<br>• Double numbers to 10 | **Counting in steps**<br>Count in 2s<br><br>Count in 10s<br><br>**Doubling and halving**<br>Find doubles to double 5 using fingers<br>e.g. *double 3* |
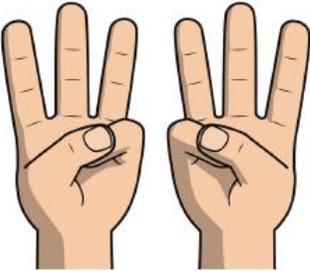
Number grid:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

**Grouping**

Begin to use visual and concrete arrays and sets of objects to find the answers to 'three lots of four' or 'two lots of five'
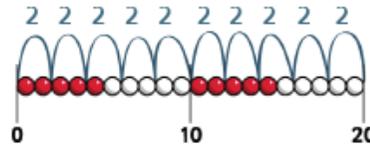
e.g. *three lots of four*
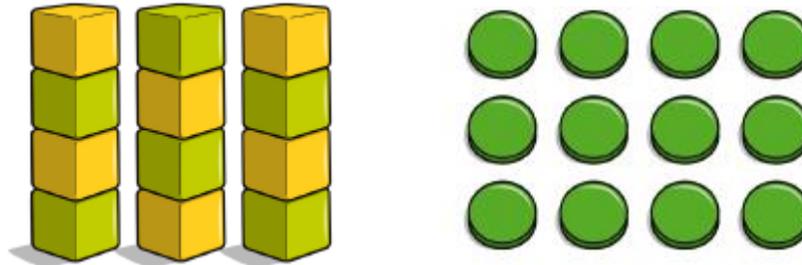


## DIVISION

| Learning Outcome | Methods and Strategies for Children |
|---|---|
| **Y1 ÷** | • Begin to count in 2s, 5s and 10s<br>• Find half of even numbers to 12 and know it is hard to halve odd numbers<br>• Find half of even numbers by sharing<br>• Begin to use visual and concrete arrays or 'sets of' to find how many sets of a small number make a larger number | **Counting in steps**<br>Count in 2s<br><br> |

Count in 10s

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

**Doubling and halving**
Find half of even numbers up to 12, including realising that it is hard to halve an odd number
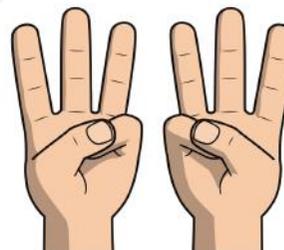
**Grouping**
Begin to use visual and concrete arrays and 'sets of' objects to find the answers to questions such as '*How many towers of three can I make with twelve cubes?*'

**Sharing**
Begin to find half of a quantity using sharing
e.g. *find half of 16 cubes by giving one each repeatedly to two children*

| Year 2 |
| --- |

| **ADDITION** |
| --- |

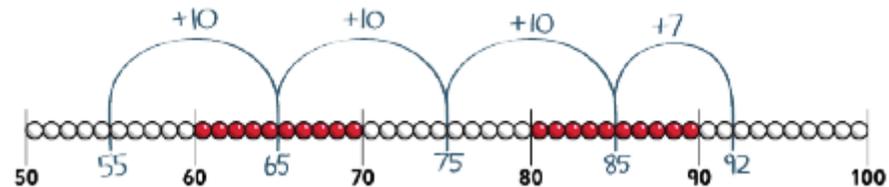| | **Learning Outcome** | **Methods and Strategies for Children** |
| --- | --- | --- |
| *Y2* **+** | • Number bonds – know all the pairs of numbers which make all the numbers to 12, and pairs with a total of 20<br>• Count on in 1s and 10s from any given 2-digit number<br>• Add two or three 1-digit numbers<br>• Add a 1-digit number to any 2-digit number using number facts, including bridging multiples of 10<br>e.g. *45 + 4*<br>e.g. *38 + 7*<br>• Add 10 and small multiples of 10 to any given 2-digit number<br>• Add any pair of 2-digit numbers | **Using place value**<br>Know 1 more or 10 more than any number<br>e.g. *1 more than 67*<br>e.g. *10 more than 85*<br>Partitioning<br>e.g. *55 + 37 as 50 + 30 and 5 + 7, then finally combine the two totals: 80 + 12*<br><br><br><br>**Counting on**<br>Add 10 and multiples of 10 to a given 1- or 2-digit number<br>e.g. *76 + 20 as 76, 86, 96 or in one hop: 76 + 20 = 96*<br>Add two 2-digit numbers by counting on in 10s, then in 1s<br>e.g. *55 + 37 as 55 + 30 (85) + 7 = 92*<br><br><br><br>Add near multiples of 10 |
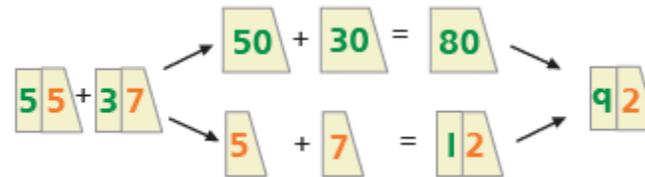
e.g. *46 + 19*
e.g. *63 + 21*

**Using number facts**
Know pairs of numbers which make the numbers up to and including 12
e.g. *8 = 4 + 4, 3 + 5, 2 + 6, 1 + 7, 0 + 8*
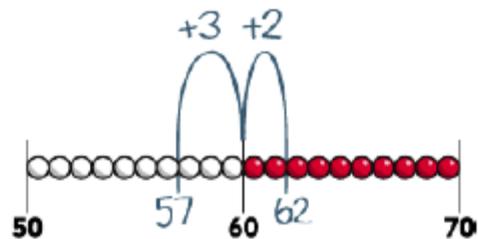e.g. *10 = 5 + 5, 4 + 6, 3 + 7, 2 + 8, 1 + 9, 0 + 10*
Use patterns based on known facts when adding
e.g. *6 + 3 = 9, so we know 36 + 3 = 39, 66 + 3 = 69, 56 + 3 = 59*

Bridging 10
e.g. *57 + 5 = 57 + 3 (60) + 2 = 62*



Add three or more 1-digit numbers, spotting bonds to 10 or doubles
e.g. *3 + 5 + 3 = 6 + 5 = 11*
e.g. *8 + 2 + 4 = 10 + 4 = 14*

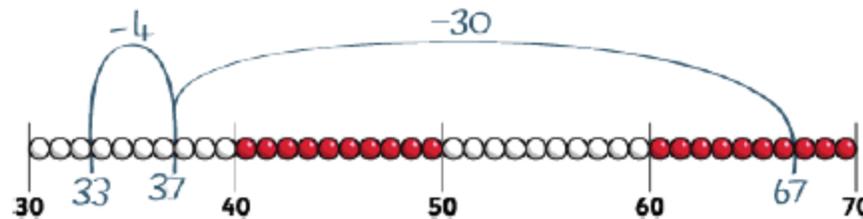| | SUBTRACTION | |
|---|---|---|
| | **Learning Outcome** | **Methods and Strategies for Children** |
| *Y2*<br><br>_ | • Number bonds – know all the pairs of numbers which make all the numbers to 12<br>• Count back in 1s and 10s from any given 2-digit number<br>• Subtract a 1-digit number from any 2-digit number using number facts, including bridging multiples of 10<br>  e.g. *56 – 3*<br>  e.g. *53 – 5*<br>• Subtract 10 and small multiples of 10 from any given 2-digit number<br>• Subtract any pair of 2-digit numbers by counting back in 10s and 1s or by counting up | **Using place value**<br>Know 1 less or 10 less than any number<br>e.g. *1 less than 74*<br>e.g. *10 less than 82*<br>Partitioning e.g. *55 – 32 as 50 – 30 and 5 – 2 and combine the answers: 20 + 3*<br><br><br><br>**Taking away**<br>Subtract 10 and multiples of 10<br>e.g. *76 – 20 as 76, 66, 56 or in one hop: 76 – 20 = 56*<br>Subtract two 2-digit numbers by counting back in 10s, then in 1s<br>e.g. *67 – 34 as 67 subtract 30 (37) then count back 4 (33)*<br><br><br><br>Subtract near multiples of 10<br>e.g. *74 – 21*<br>e.g. *57 – 19* |
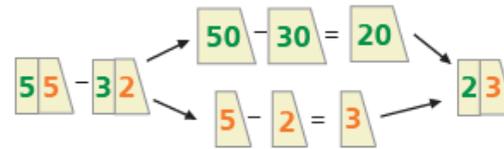
**Using number facts**

Know pairs of numbers which make the numbers up to and including 12 and derive related subtraction facts
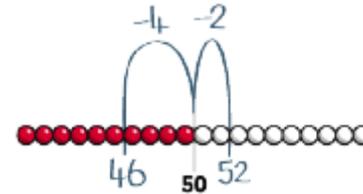
e.g. *10 – 6 = 4, 8 – 3 = 5, 5 – 2 = 3*

Subtract

e.g. *9 – 3*
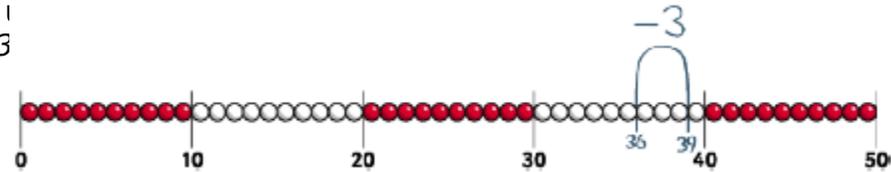


Bridging 10

e.g. *52 – 6 as 52 – 2 (50) – 4 = 46*



**Counting up**

Find a difference between two numbers on a line where the numbers are close together

e.g. *51 – 47*

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**MULTIPLICATION**

| | | Learning Outcome | Methods and Strategies for Children |
|---|---|---|---|
| **Y2** **×** | | • Count in 2s, 5s and 10s<br>• Begin to count in 3s<br>• Begin to understand that multiplication is repeated addition and to use arrays<br>  e.g. *3 × 4 is three rows of 4 dots* | **Counting in steps**<br>Count in 2s, 5s and 10s<br> |

- Begin to learn the ×2, ×3, ×5 and ×10 tables, seeing these as 'lots of' e.g. *5 lots of 2, 6 lots of 2, 7 lots of 2*
- Double numbers up to 20
- Begin to double multiples of 5 to 100
- Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5
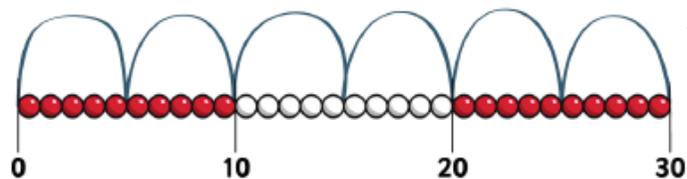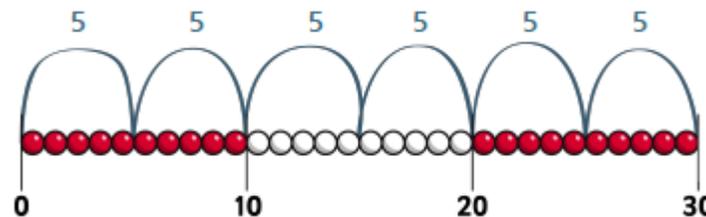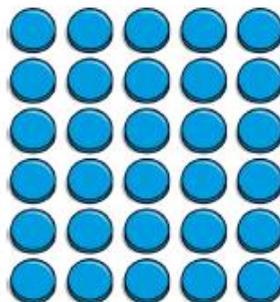


Begin to count in 3s

## Doubling and halving
Begin to know doubles of multiples of 5 to 100
e.g. *double 35 is 70*
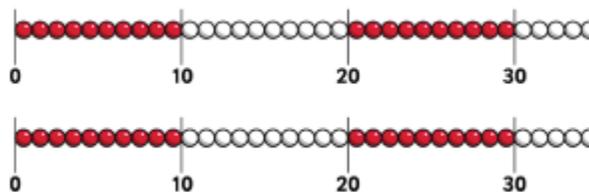


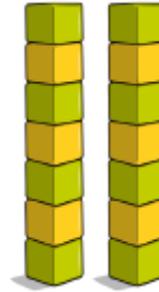Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5

## Grouping
Use arrays to find answers to multiplication and relate to 'clever' counting
e.g. *3 × 4 as three lots of four things*
e.g. *6 × 5 as six steps in the 5s count as well as six lot s of five*



Understand that 5 × 3 can be worked out as three 5s or five 3s

**Using number facts**

Know doubles to double 20

e.g. *double 7 is 14*



Start learning ×2, ×5, ×10 tables, relating these to 'clever' counting in 2s, 5s, and 10s

e.g. *5 × 10 = 50, and five steps in the 10s count = 10, 20, 30, 40, 50*



## DIVISION

| | **Learning Outcome** | **Methods and Strategies for Children** |
|---|---|---|
| **Y2**<br>**÷** | • Count in 2s, 5s and 10s<br>• Begin to count in 3s<br>• Using fingers, say where a given number is in the 2s, 5s or 10s count<br>  e.g. *8 is the fourth number when I count in 2s*<br>• Relate division to grouping<br>  e.g. *How many groups of 5 in 15?*<br>• Halve numbers to 20<br>• Begin to halve numbers to 40 and multiples of 10 to 100 | **Counting in steps**<br>Count in 2s, 5s and 10s<br>Begin to count in 3s |
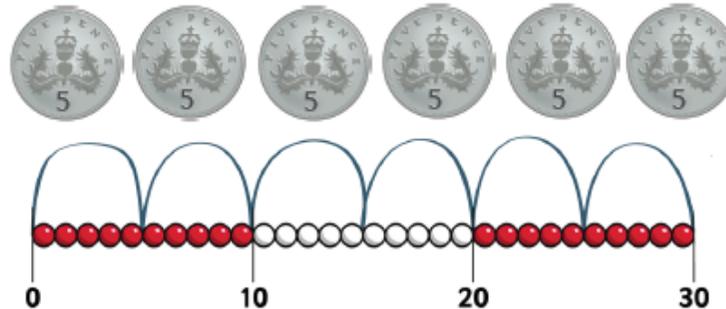
- Find $1/2$, $1/3$, $1/4$ and $3/4$ of a quantity of objects and of amounts (whole number answers)

**Doubling and halving**

Find half of numbers up to 40, including realising that half of an odd number gives a remainder of 1 or an answer containing a ½

e.g. ½ *of 11 = 5 ½*
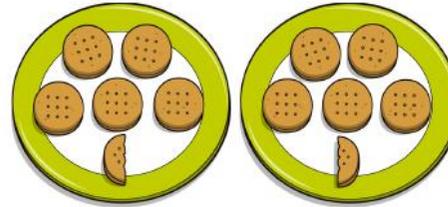


Begin to know half of multiples of 10 to 100

e.g. *half of 70 is 35*

**Grouping**

Relate division to multiplication by using arrays or towers of cubes to find answers to division

e.g. *'How many towers of five cubes can I make from twenty cubes?' as _ × 5 = 20 and also as 20 ÷ 5 = _*
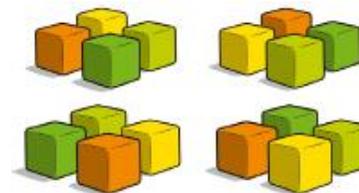


Relate division to counting in steps and hence to multiplication
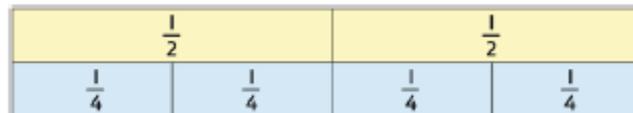
e.g. *'How many fives do I count to get to twenty?'*

**Sharing**

Begin to find half or a quarter of a quantity using sharing

e.g. *find a quarter of 16 cubes by sorting the cubes into four piles*



Find ¼ , ½ , ¾ of small quantities

| | | **Using number facts**<br>Know half of even numbers to 24<br>Know ×2, ×5 and ×10 division facts<br>Begin to know ×3 division facts |
|---|---|---|